REMARKS

In response to the Final Office Action dated August 24, 2007, claims 1, 5-6, 13-14, 17-18, 22 and 24 are amended, claims 3-4, 8-9, 15-16, 20 and 23 are cancelled without prejudice, and claims 25-33 are newly added. Claims 1, 2, 5-7, 10-14, 17-19, 21-22, 24-33 are now active in this application. No new matter has been added. Claims 1, 6, 13, 18, and 24 are the only independent claims.

Claims 1, 2, 5, 6, 10-14, 17, 18, 21, 22, and 24 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Tanaka (U.S. 7,116,816) in view of Bamberger (U.S. 5,946,407). Applicants traverse this rejection.

Claims 7 and 19 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Tanaka in view of Bamberger and further in view of De Gasperi (U.S. 4,433,385). Applicants traverse this rejection.

Independent claim 1 recites, in part, "**setting a specified pixel value range which is positioned between representative pixel values of two regions in said inspection images and/or said reference image, said two regions corresponding to two kinds of regions on said object**; obtaining transfer characteristics to enhance a difference between arbitrary pixel values included in said specified pixel value range relative to a difference between arbitrary pixel values other than said specified pixel value range; obtaining an enhanced differential image between said inspection image and said reference image on the basis of said transfer characteristics; and performing an inspection on the basis of said enhanced differential image."

As an illustrative and non-limiting examples of the "**specified pixel value range**" of claim 1, please note range 63 in FIG. 6 for a bimodal distribution, and please note range 63 in FIG. 7 for a distribution that is not bimodal.

Further, please note that the term **"two regions"** in claim 1 refers to regions of an image with different types of structures. For example, the two regions may be the wiring pattern region and the background region, as described in the application at page 9, lines 1-2, 20-21. These two regions may yield a bimodal pixel value distribution in a histogram, as illustrated by FIG. 6.

Independent claim 6 recites, in part, "**setting a specified pixel value range which is positioned outside a pixel value range corresponding to a specific region in said inspection image and/or said reference image, said specific region corresponding to a specific kind of region on said object**; obtaining transfer characteristics to enhance a difference between arbitrary pixel values included in said specified pixel value range relative to a difference between arbitrary pixel values other than said specified pixel value range."

Independent claim 13 recites, in part, "c) **setting a specified pixel value range which is positioned between representative pixel values of two regions** in said inspection image and/or said reference image, said two regions corresponding to two kinds of regions on said object; d) obtaining transfer characteristics to enhance difference between arbitrary pixel values included in said specified pixel value range relatively to difference between arbitrary pixel values other than said specified pixel value range.

Independent claim 18 recites, in part, "c) **setting a specified pixel value range which is positioned outside a pixel value range corresponding to a specific region in said inspection image and/or said reference image**, said specific region corresponding to a specific kind of region on said object; d) obtaining transfer characteristics to enhance a difference between arbitrary pixel values included in said specified pixel value range relative to a difference between arbitrary pixel values other than said specified pixel value range."

Independent claim 24 recites, in part, "c) **setting a specified pixel value range which is positioned between representative pixel values of two regions in said inspection image and/or said reference image, said two regions corresponding to two kinds of regions on said object**; d) obtaining transfer characteristics to enhance a difference between arbitrary pixel values included in said specified pixel value range relative to a difference between arbitrary pixel values other than said specified pixel value range."

In order to establish a *prima facie* obviousness under 35 U.S.C. § 103(a), all the claim limitations must be taught or suggested by the prior art. *In re Rokya*, 490 F. 2d 981, 180 USPQ 580 (CCPA 1974). Further, "rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *In re Kahn*, 441 F. 3d 977, 988 (Fed. Cir. 2006). At a minimum, the cited prior art does not disclose (expressly or inherently) the above recited limitation.

The Office Action, at pages 5 and 6, admits that Tanaka does not disclose using transfer characteristics, and asserts that Bamberger, at FIGS. 6C-6E and column 13 at lines 14-21, discloses using transfer characteristics.

Additionally, the Office Action, at page 3, asserts that Bamberger, at FIG. 6C-E and column 13, lines 14-21, discloses using transfer characteristics to enhance a difference.

However, Bamberger, at column 13, lines 13-33 merely states:

> If however all possible reductions have been made, the input pair table is complete and the system goes to step 424 to make a look up table. FIG. 6E illustrates a look up table 462 which is a step function. The input of the look up table is the grey levels of the digital image of a region of interest and the output is the converted grey levels creating an enhanced image. In order to derive the incremental steps 460 along the i' axis of the table, the system counts the number of the pairs in the input pair table and divides 255 by the number of the pairs to get a value "dl." For the intervals defined by each pair, the table converts the grey

> level values within that interval into new values, which are linearly distributed within the increment "dl" along the i' axis. Grey level values between two pairs are converted into a fixed value. FIG. 6E illustrates an example of the intervals 464, 466, 468, 470 and 472, within which grey level conversions occur. As can be seen, a large grey level **difference between a pixel and its neighboring pixels** as illustrated by pair 470 is diminished and a small grey level **difference between a pixel and its neighboring pixel** as illustrated by pair 466 is accentuated. Remarkably, the overall result is an image with an improved contrast.

Bamberger merely uses a step function to discretize grey values of a single image based on a value "dl." See FIG. 6E. This makes it possible to diminish a large grey level difference between a pixel and its neighboring pixels and accentuate a small grey level difference between a pixel and its neighboring pixel (col. 13, lines 28-32).

Further, Bamberger merely applies this step function to single image, so that "the overall result is an image with an improved contrast," as stated above. Thus, **Bamberger is directed towards adjusting grey level differences between adjacent pixels in a single image.**

Thus, Bamberger does **not** set a "**specified pixel value range which is positioned between representative pixel values of two regions in said inspection images and/or said reference image, said two regions corresponding to two kinds of regions on said object,**" as recited by claim 1.

Thus, at a minimum, the combination of Tanaka and Bamberger fails to teach or suggest the forgoing limitation, and therefore independent claim 1 is allowable.

Further, Applicants submit that independent claims 6, 13, 18, and 24 are allowable, at a minimum, for the same reasons as independent claim 1.

Under Federal Circuit guidelines, a dependent claim is allowable if the independent claim upon which it depends is allowable because all the limitations of the independent claim are contained in the dependent claims, *Hartness International Inc. v. Simplimatic Engineering Co.*, 819 F.2d at 1100, 1108 (Fed. Cir. 1987).

Thus, as independent claims 1, 6, 13, 18, and 24 are allowable for the reasons set forth above, it is respectfully submitted that dependent claims 2, 5, 7, 10-12, 14, 17, 19, 21-22, and 25-31 are allowable for at least the same reasons as their respective base claims.

Additionally, dependent claims 11, 22, 27, and 32 are require differential images. None of the cited art disclose differential images. Thus, Applicants submit that dependent claims 11, 22, 27, and 32 are also allowable for this additional reason.

Further, dependent claim 7 requires average values of values of pixels belonging to two regions, and dependent claim 19 requires a standard deviation of values of pixels belonging to the specific region. Bamberger and Gasperi merely disclose simple averaging (or smoothing) of adjacent pixels, and do not disclose regions in the sense of independent claim 1 as described above. The other cited art does not remedy the deficiencies of Bamberger and Gasperi. Thus, Applicants submit that dependent claims 7 and 19 are also allowable for these additional reasons.

Accordingly, it is urged that the application, as now amended, is in condition for allowance, an indication of which is respectfully solicited. If there are any outstanding issues that might be resolved by an interview or an Examiner's amendment, Examiner is requested to call Applicants' attorney at the telephone number shown below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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